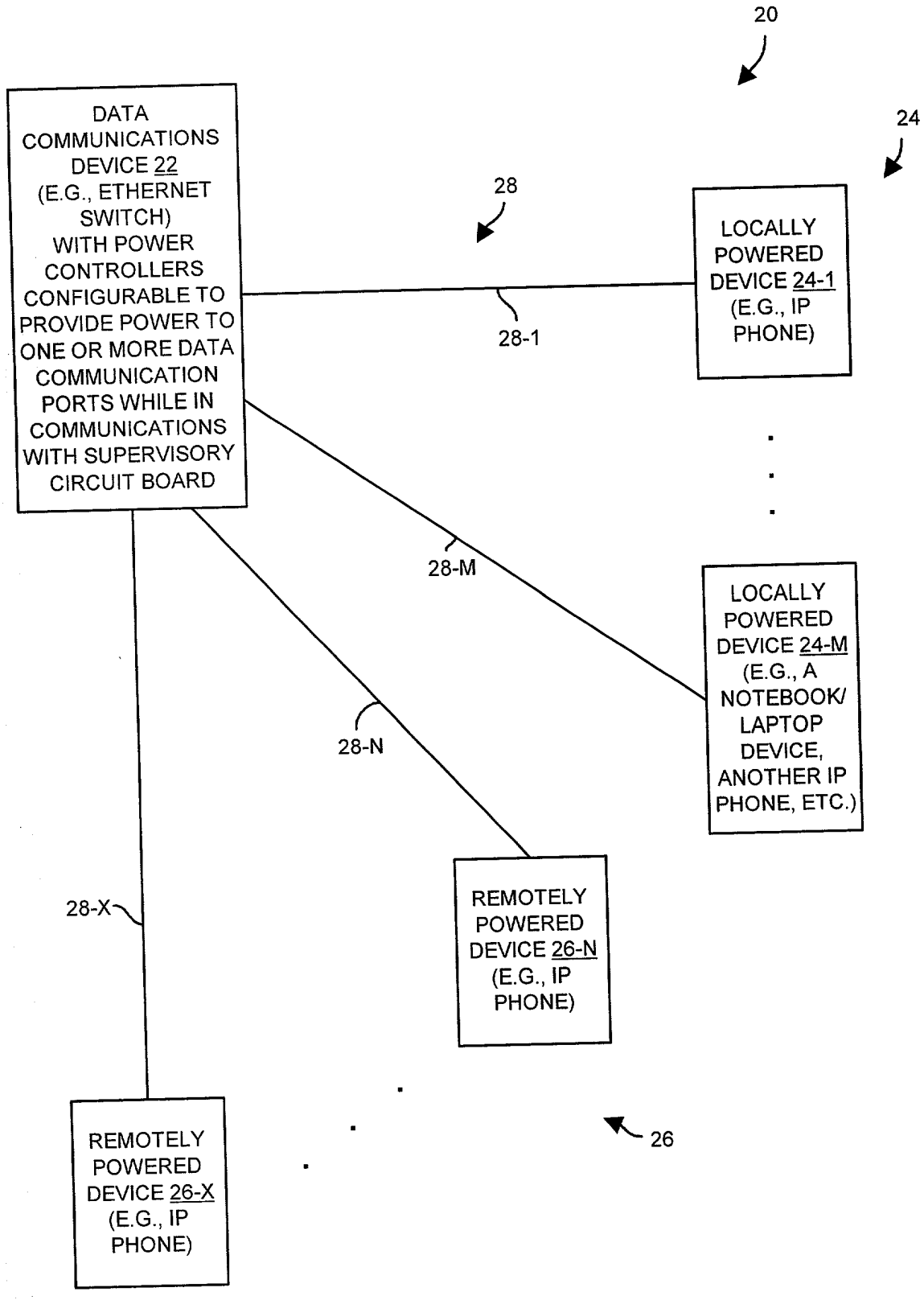
20
24
DATA COMMUNICATIONS DEVICE 22 (E.G., ETHERNET SWITCH) WITH POWER CONTROLLERS CONFIGURABLE TO PROVIDE POWER TO ONE OR MORE DATA COMMUNICATION PORTS WHILE IN COMMUNICATIONS WITH SUPERVISORY CIRCUIT BOARD
28
28-1
LOCALLY POWERED DEVICE 24-1 (E.G., IP PHONE)
28-M
LOCALLY POWERED DEVICE 24-M (E.G., A NOTEBOOK/ LAPTOP DEVICE, ANOTHER IP PHONE, ETC.)
28-N
REMOTELY POWERED DEVICE 26-N (E.G., IP PHONE)
28-X
REMOTELY POWERED DEVICE 26-X (E.G., IP PHONE)
26

FIG. 1

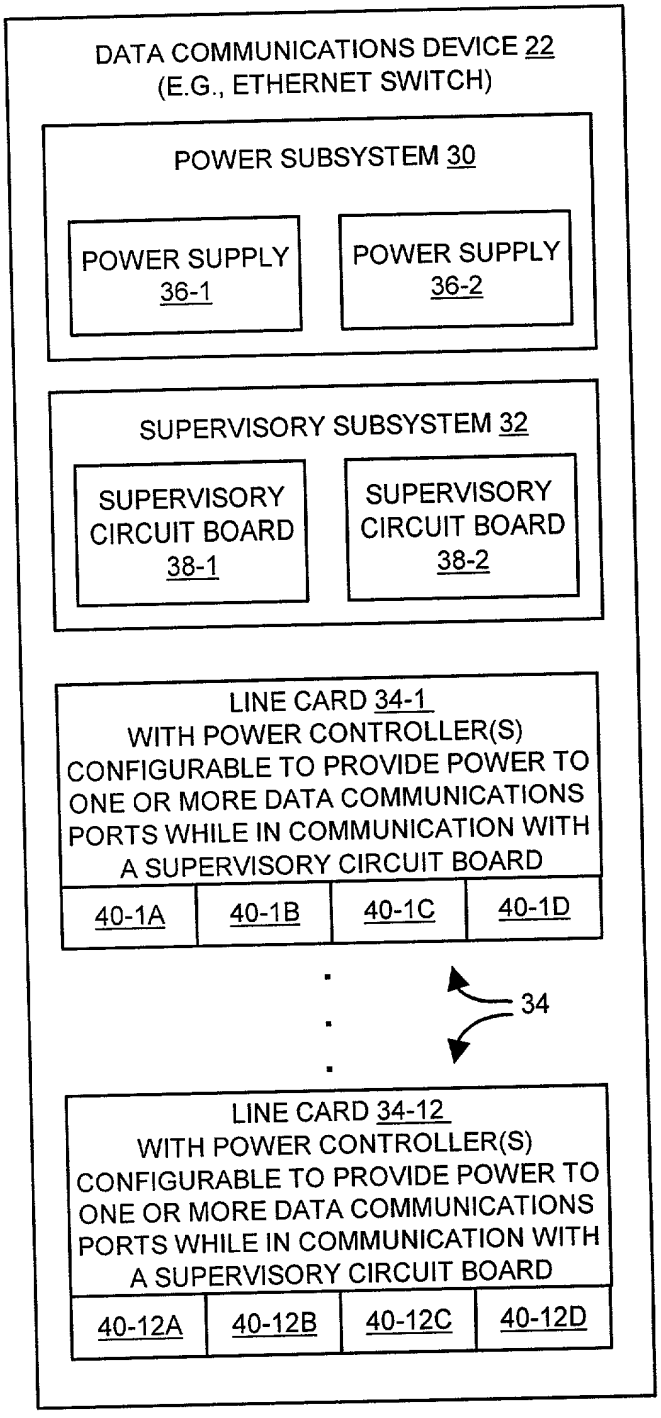
DATA COMMUNICATIONS DEVICE 22
(E.G., ETHERNET SWITCH)
POWER SUBSYSTEM 30
POWER SUPPLY 36-1
POWER SUPPLY 36-2
SUPERVISORY SUBSYSTEM 32
SUPERVISORY CIRCUIT BOARD 38-1
SUPERVISORY CIRCUIT BOARD 38-2
LINE CARD 34-1
WITH POWER CONTROLLER(S)
CONFIGURABLE TO PROVIDE POWER TO
ONE OR MORE DATA COMMUNICATIONS
PORTS WHILE IN COMMUNICATION WITH
A SUPERVISORY CIRCUIT BOARD
40-1A
40-1B
40-1C
40-1D
34
LINE CARD 34-12
WITH POWER CONTROLLER(S)
CONFIGURABLE TO PROVIDE POWER TO
ONE OR MORE DATA COMMUNICATIONS
PORTS WHILE IN COMMUNICATION WITH
A SUPERVISORY CIRCUIT BOARD
40-12A
40-12B
40-12C
40-12D

FIG. 2

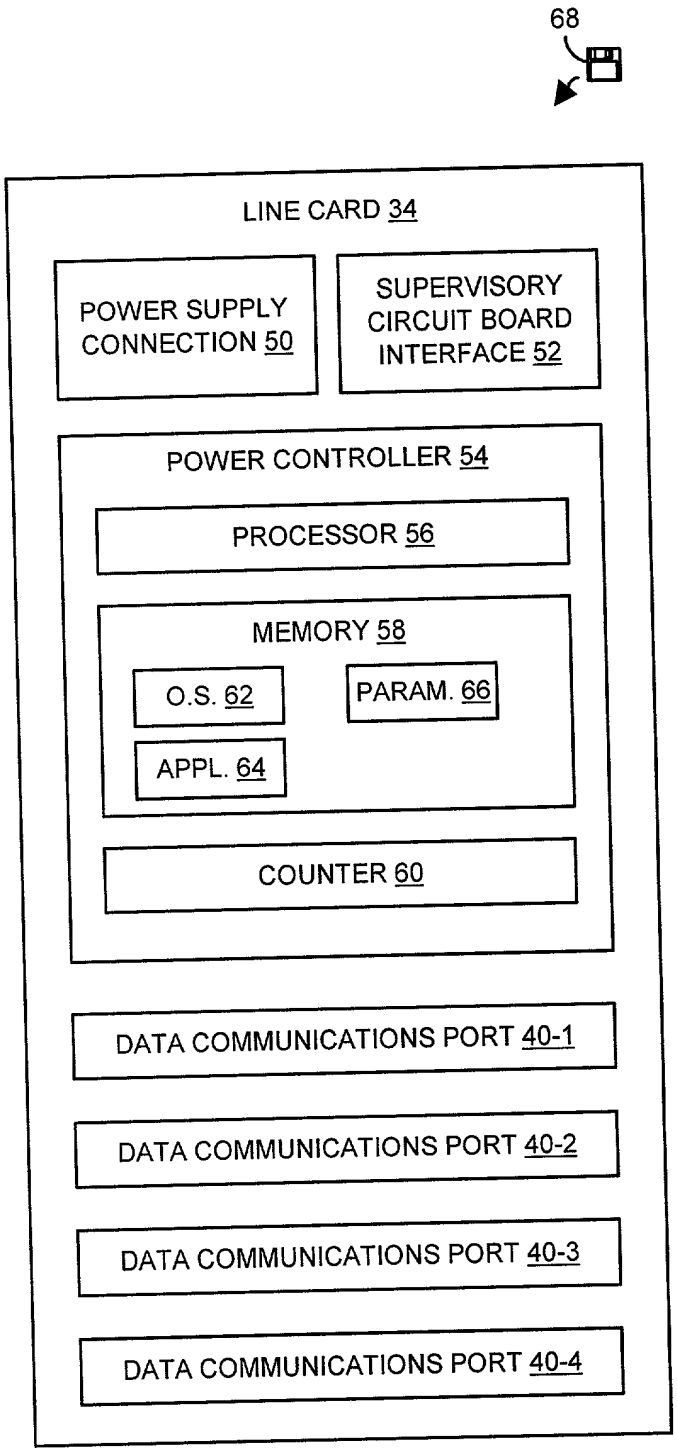
68
LINE CARD 34
POWER SUPPLY CONNECTION 50
SUPERVISORY CIRCUIT BOARD INTERFACE 52
POWER CONTROLLER 54
PROCESSOR 56
MEMORY 58
O.S. 62
PARAM. 66
APPL. 64
COUNTER 60
DATA COMMUNICATIONS PORT 40-1
DATA COMMUNICATIONS PORT 40-2
DATA COMMUNICATIONS PORT 40-3
DATA COMMUNICATIONS PORT 40-4

FIG. 3

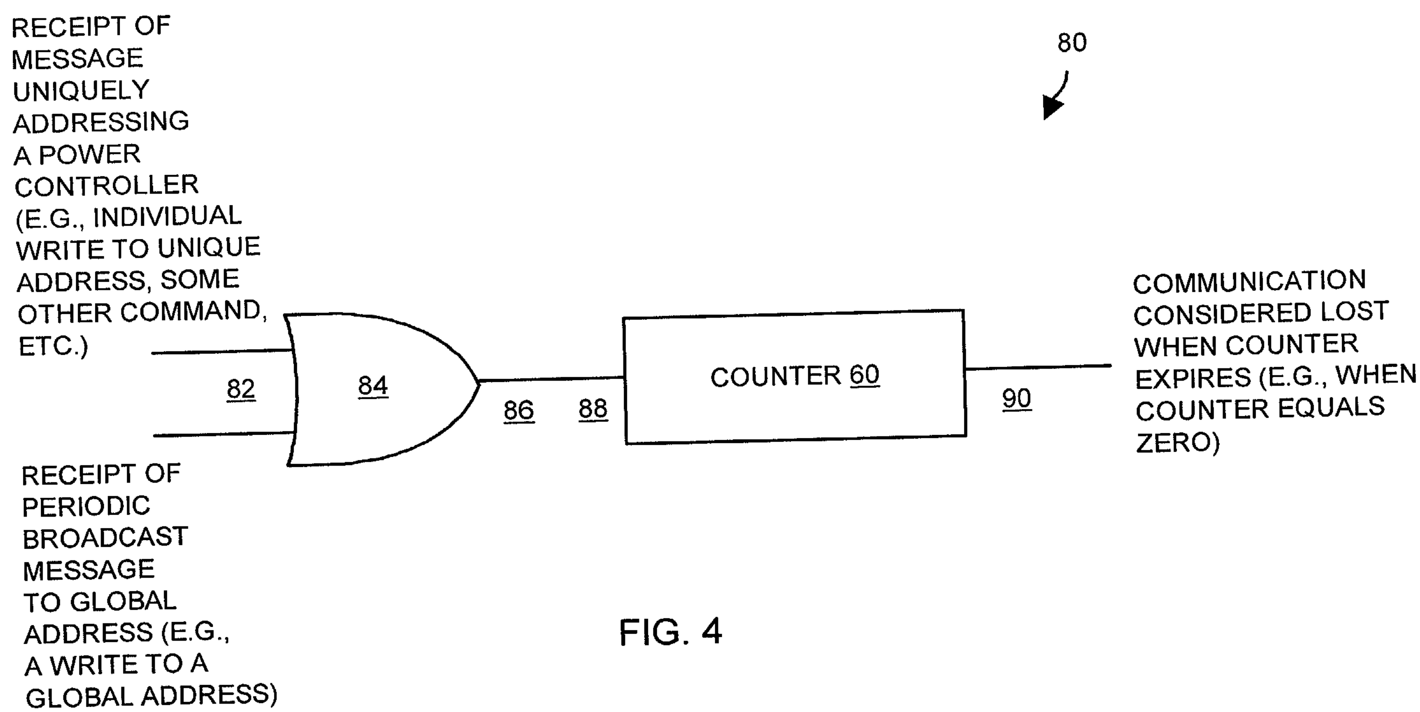
RECEIPT OF MESSAGE UNIQUELY ADDRESSING A POWER CONTROLLER (E.G., INDIVIDUAL WRITE TO UNIQUE ADDRESS, SOME OTHER COMMAND, ETC.)
RECEIPT OF PERIODIC BROADCAST MESSAGE TO GLOBAL ADDRESS (E.G., A WRITE TO A GLOBAL ADDRESS)
82
84
86
88
COUNTER 60
90
80
COMMUNICATION CONSIDERED LOST WHEN COUNTER EXPIRES (E.G., WHEN COUNTER EQUALS ZERO)

FIG. 4

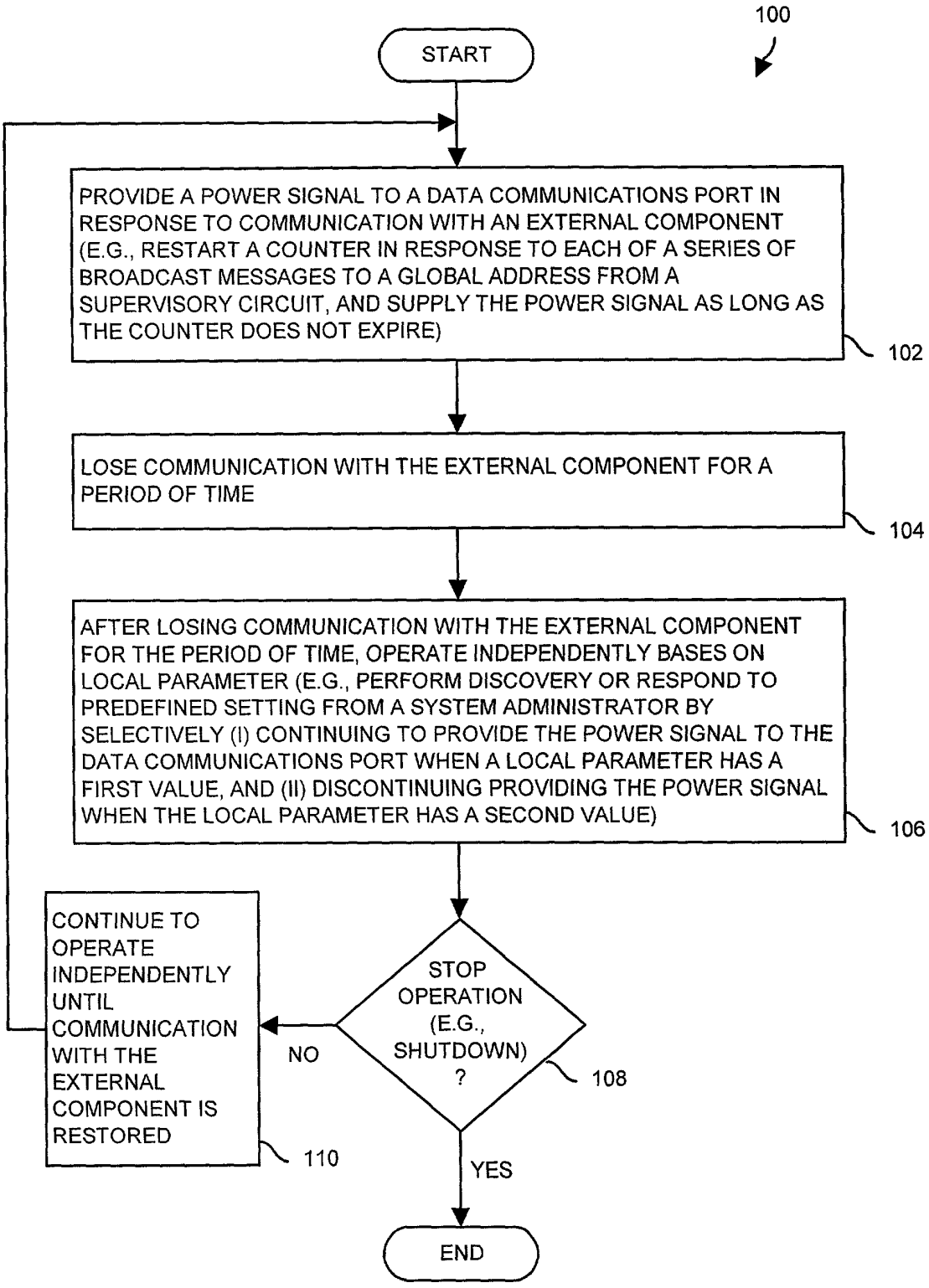
100
START
PROVIDE A POWER SIGNAL TO A DATA COMMUNICATIONS PORT IN RESPONSE TO COMMUNICATION WITH AN EXTERNAL COMPONENT (E.G., RESTART A COUNTER IN RESPONSE TO EACH OF A SERIES OF BROADCAST MESSAGES TO A GLOBAL ADDRESS FROM A SUPERVISORY CIRCUIT, AND SUPPLY THE POWER SIGNAL AS LONG AS THE COUNTER DOES NOT EXPIRE)
102
LOSE COMMUNICATION WITH THE EXTERNAL COMPONENT FOR A PERIOD OF TIME
104
AFTER LOSING COMMUNICATION WITH THE EXTERNAL COMPONENT FOR THE PERIOD OF TIME, OPERATE INDEPENDENTLY BASES ON LOCAL PARAMETER (E.G., PERFORM DISCOVERY OR RESPOND TO PREDEFINED SETTING FROM A SYSTEM ADMINISTRATOR BY SELECTIVELY (I) CONTINUING TO PROVIDE THE POWER SIGNAL TO THE DATA COMMUNICATIONS PORT WHEN A LOCAL PARAMETER HAS A FIRST VALUE, AND (II) DISCONTINUING PROVIDING THE POWER SIGNAL WHEN THE LOCAL PARAMETER HAS A SECOND VALUE)
106
STOP OPERATION (E.G., SHUTDOWN) ?
108
NO
CONTINUE TO OPERATE INDEPENDENTLY UNTIL COMMUNICATION WITH THE EXTERNAL COMPONENT IS RESTORED
110
YES
END

FIG. 5

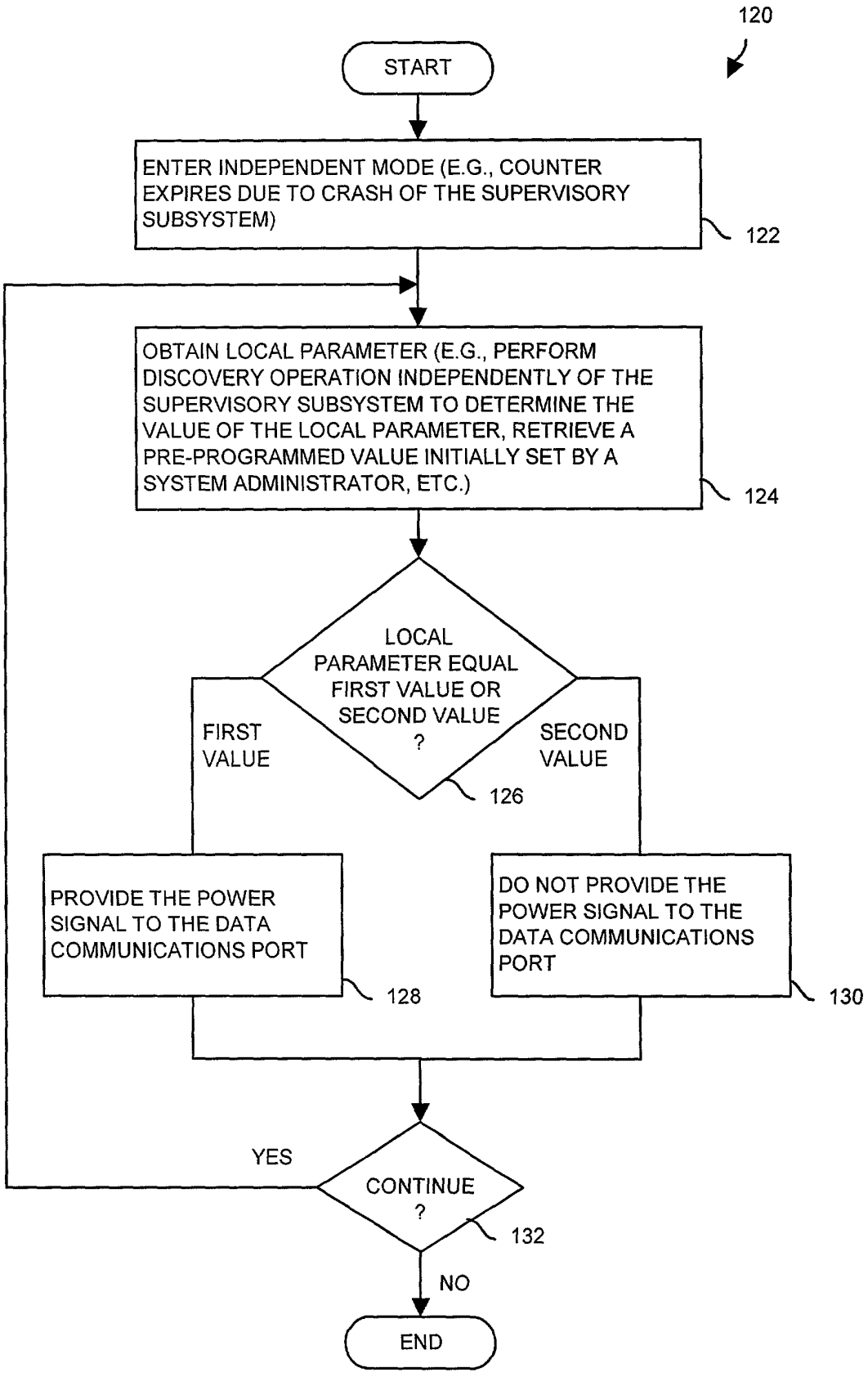
120
START
ENTER INDEPENDENT MODE (E.G., COUNTER EXPIRES DUE TO CRASH OF THE SUPERVISORY SUBSYSTEM)
122
OBTAIN LOCAL PARAMETER (E.G., PERFORM DISCOVERY OPERATION INDEPENDENTLY OF THE SUPERVISORY SUBSYSTEM TO DETERMINE THE VALUE OF THE LOCAL PARAMETER, RETRIEVE A PRE-PROGRAMMED VALUE INITIALLY SET BY A SYSTEM ADMINISTRATOR, ETC.)
124
LOCAL PARAMETER EQUAL FIRST VALUE OR SECOND VALUE ?
126
FIRST VALUE
SECOND VALUE
PROVIDE THE POWER SIGNAL TO THE DATA COMMUNICATIONS PORT
128
DO NOT PROVIDE THE POWER SIGNAL TO THE DATA COMMUNICATIONS PORT
130
YES
CONTINUE ?
132
NO
END

FIG. 6

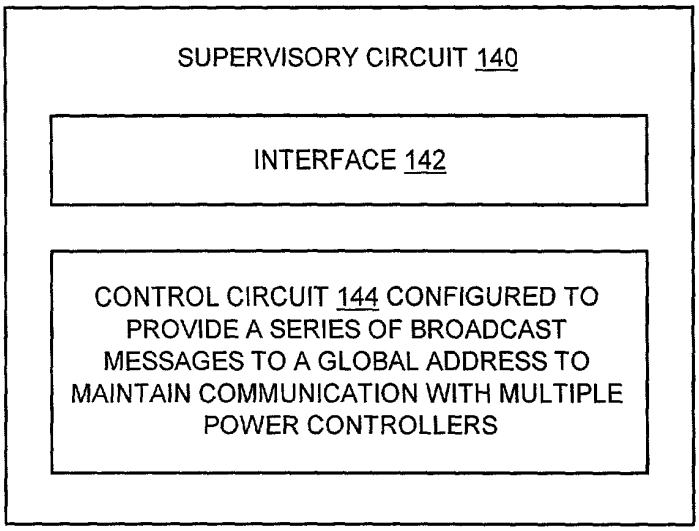
SUPERVISORY CIRCUIT 140
INTERFACE 142
CONTROL CIRCUIT 144 CONFIGURED TO PROVIDE A SERIES OF BROADCAST MESSAGES TO A GLOBAL ADDRESS TO MAINTAIN COMMUNICATION WITH MULTIPLE POWER CONTROLLERS

FIG. 7

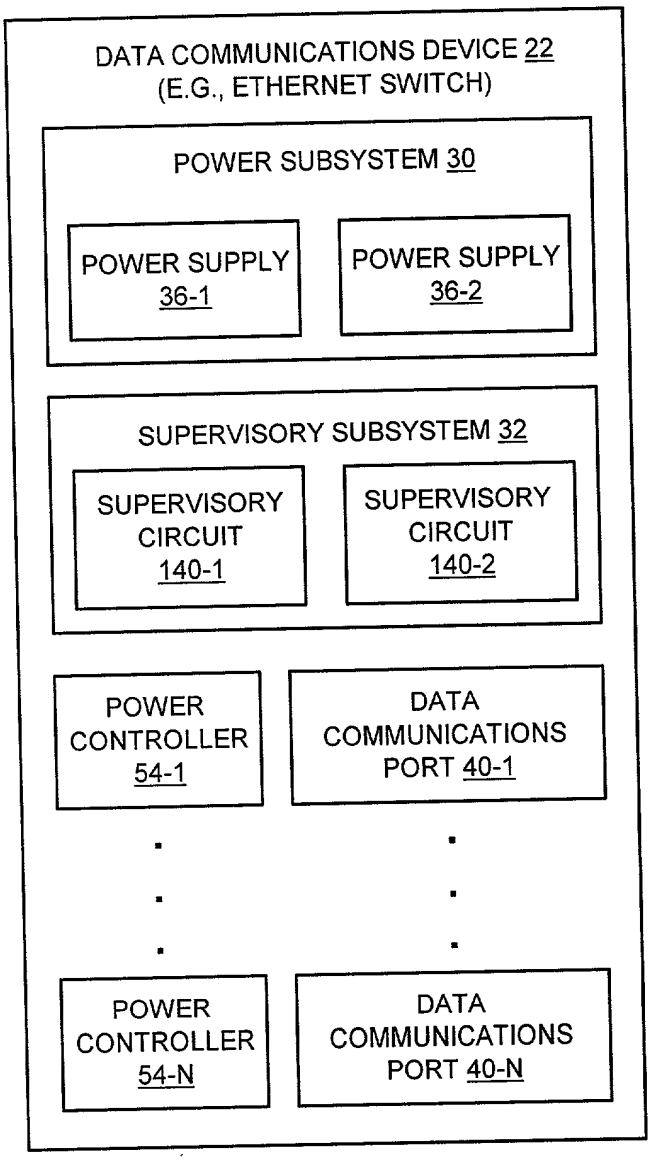
DATA COMMUNICATIONS DEVICE 22
(E.G., ETHERNET SWITCH)
POWER SUBSYSTEM 30
POWER SUPPLY 36-1
POWER SUPPLY 36-2
SUPERVISORY SUBSYSTEM 32
SUPERVISORY CIRCUIT 140-1
SUPERVISORY CIRCUIT 140-2
POWER CONTROLLER 54-1
DATA COMMUNICATIONS PORT 40-1
POWER CONTROLLER 54-N
DATA COMMUNICATIONS PORT 40-N

FIG. 8

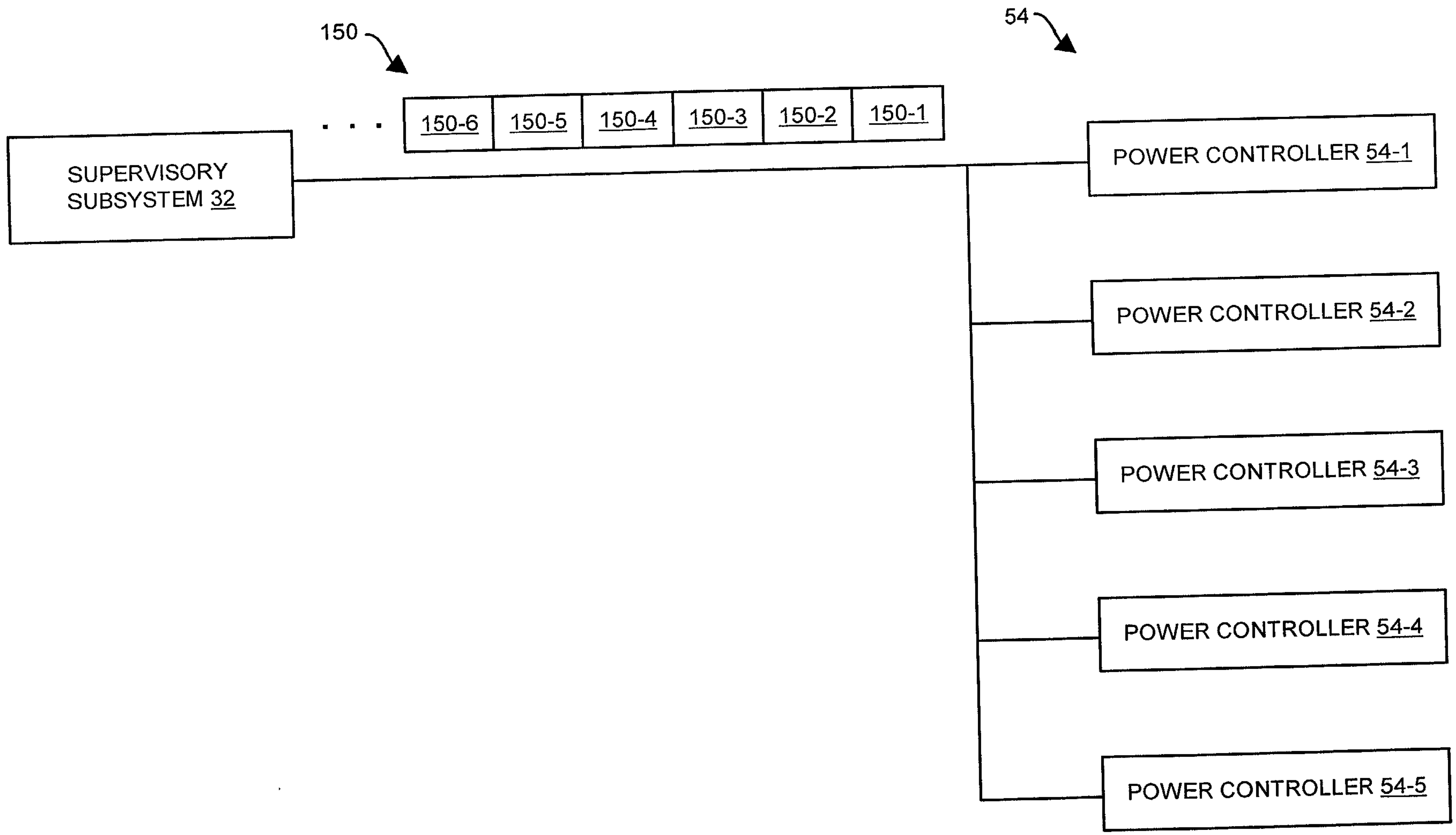
150
54
SUPERVISORY
SUBSYSTEM 32
150-6
150-5
150-4
150-3
150-2
150-1
POWER CONTROLLER 54-1
POWER CONTROLLER 54-2
POWER CONTROLLER 54-3
POWER CONTROLLER 54-4
POWER CONTROLLER 54-5

FIG. 9

160

	TRANSACTION	DESCRIPTION	EFFECT ON POWER CONTROLLER 54-1 WHEN THE POWER CONTROLLER IS CONFIGURED TO RESPOND TO TRANSACTIONS UNIQUELY ADDRESSING THE POWER CONTROLLER AND TO TRANSACTIONS TO THE GLOBAL ADDRESS
	150-1	ADDRESS = POWER CONTROLLER 54-1 COMMAND = SETUP REGISTERS	COMMUNICATION WITH SUPERVISORY SUBSYSTEM MAINTAINED (E.G., RESET COUNTER)
	150-2	ADDRESS = POWER CONTROLLER 54-2 COMMAND = SETUP REGISTERS	NO RESPONSE
	150-3	ADDRESS = POWER CONTROLLER 54-1 COMMAND = POWER PORT	COMMUNICATION WITH SUPERVISORY SUBSYSTEM MAINTAINED (E.G., RESET COUNTER)
	150-4	ADDRESS = POWER CONTROLLER 54-1 COMMAND = READ STATUS	COMMUNICATION WITH SUPERVISORY SUBSYSTEM MAINTAINED (E.G., RESET COUNTER)
	150-5	ADDRESS = GLOBAL COMMAND = RESET COUNTER	COMMUNICATION WITH SUPERVISORY SUBSYSTEM MAINTAINED (E.G., RESET COUNTER)
	150-6	ADDRESS = POWER CONTROLLER 54-3 COMMAND = SETUP REGISTERS	NO RESPONSE

FIG. 10